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(54) Title of the Invention Insect Trapping Device

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## Specifications

### 1. Title of the Invention

#### Insect Trapping Device

### 2. Claims of the Utility Model Registration Application

An insect trapping device characterized by a light source, an insect-capturing means that has suction openings located at appropriate locations around the perimeter of the light source and that seizes insects that have been suctioned in through the suction openings, a suction means that generates a suction air current in the aforementioned suction openings by operating this insect-capturing means at a low pressure, and a circulating air channel that directs the air that is expelled when running this suction means such that the air is discharged from the above-mentioned suction openings.

### 3. Detailed Explanation of the Invention

#### (Industrial Field of Application)

This invention is an insect trapping device to be used to catch insects that are attracted to the light emitted by night illumination equipment, indoor lamps, and such.

#### (Prior Art)

Night illumination equipment is installed in parking lots and such at outdoor sports facilities and amusement parks for use at night, and various insects are attracted to this illumination in large numbers, fly in and cause unpleasantness. Therefore, insect trapping devices have been used in the past to catch these insects. Prior insect trapping devices had as their main purpose the extermination of the insects attracted to the light, and for example, insect exterminating lamps that give off insect-killing wavelength light and electric-shock insect exterminating devices, which exterminate the insect attracted to the light by using a high voltage, have been used.

#### (Problems that the Invention is to Solve)

These prior insect trapping devices, however, require time and energy to finish up the task since the insects are scattered around on the ground after being exterminated. Also, in terms of exterminating the insects, the insects that fly by an insect-exterminating lamp must be exposed to the light for a certain minimum period, and, with an electric shock insect exterminating device, the insects must come into direct contact with the voltage wire. In either case, the rate of seizing insects that fly by is poor.

This invention takes into consideration the above-mentioned conditions, and is meant to provide an insect-trapping device that does not scatter the seized insects, and also, will be able to seize almost all the insects that fly by.

#### (Means of Solving the Problems)

In order to achieve the above mentioned objectives, this invention is characterized by a light source, an insect-capturing means that has suction openings located at appropriate locations around the perimeter of the light source and that seizes insects that have been suctioned in through the suction openings, a suction means that generates a suction air current in the aforementioned suction openings by operating this insect-capturing means at a low pressure, and a circulating air channel that directs the air that is expelled when running this suction means such that the air is discharged from the above-mentioned suction openings.

#### (Operation of the Invention)

In the above-mentioned structure, the suctioning air current generated by running the suctioning means is used to forcibly seize insects flying toward the light source. Pressurized air, which is expelled by the insect-capturing means by running the suctioning means, is returned to the suction openings and discharged, accounting for the circular flow of air. Therefore, the air suctioning force is increased and insect adhesion is prevented.

(Embodiments)

Below, the invention will be explained in detail while referring to the attached diagrams.

Diagram 1 is an overall diagram that shows one working example of the invention, which is an insect trapping device consisting of a light source 1, insect-capturing means 2, and suctioning means 3. The light source 1 lights by florescent bulb, incandescent bulb, neon tube, mercury lamp and such, and the power supply can be from an outside power source, battery, and such. The light source 1 functions to attract insects at night, and the insects fly toward the light source attracted by the light emitted by the light source 1. Therefore, general light sources like those mentioned above or insect-exterminating lights can be used as the light source 1, but light sources with lights that have wavelengths particularly attractive to insects can be selected. Therefore, for example, if the intention is to eliminate pests like mosquitoes, moths and such, one can use a light source that emits a wavelength that attracts these pests. In this case, if a general light source is used as the light source, a light filter or such could be wrapped around the general light source or installed to only emit the wavelength that attracts these.

The insect-capturing means 2 is a means for seizing insects attracted by the light from the light source 1. This insect-capturing means 2 has suction openings 21 and captured insect chamber 22, which is connected to suction openings 21. The suction openings 21 are situated at appropriate locations surrounding the light source 1, and function so as to suction in the insects that fly toward the light source 1. In the Diagram, the suction openings 21 are in the form of a trumpet and the light source 1 is on the inside. In this configuration, the suction openings 21 can be arranged entirely around the light source 1, but regardless, the suction openings 21 can be arranged differently close to the light source 1. The insect seizure chamber 22 is connected directly to the suction openings 21 or via a tube 23, and the interior is connected to the suction openings 21. The insect seizure chamber 22 is under low atmospheric pressure due to the means of suctioning 3, which will be described below, and consequently, a suctioning air current is generated in the suction openings 21, and insects that fly toward the light source 1 are forcibly suctioned into the suction openings 21 by this suctioning air current. In this way, with a structure that seizes them with a suctioning air current, most of the insects that fly close to the light source 1 can be seized, not just the insects that make contact with the light source 1. Therefore, the rate of seizing insects is considerably increased. The insect seizure chamber 22 seizes insects suctioned in this way by the suction openings 21. The suctioning means 3 by the insect seizure chamber 22, has a filter 24, like screening and such, that permits only air to pass. This isolates the seizure chamber from the suctioning means 3. In other words, the insects sucked into the insect seizure chamber 22 are prevented from being sucked further, and are held in the insect seizure chamber 22. In this way, insects are securely trapped in insect seizure chamber 22. In this case, the insect seizure chamber 22 is made with a door-like section (not in the diagram) that can be opened and closed. After insects are seized, the insects can be removed by opening this door. In this way, the insects are led into the insect seizure chamber 22 and are not scattered in the surroundings. This method is sanitary and make finishing up the task easier. An insect seizure bag 26 is installed inside this insect seizure chamber 22. The insect seizure bag 26 is attached to the end of the pipe 23, and the bag interior is linked to suction openings 21. In addition, the entire bag is made of material that allows air to pass or a combination of airtight material and material that allows air to pass. Therefore, when the insect seizure chamber 22 is under low pressure created by running the suctioning means 3, the insect seizure bag 26 is also under low pressure. As a result, insects can be directed into the insect seizure bag 26 from the suction openings 21 when suctioning airflow is generated at the suction openings 21, making it possible to seize insects without any obstacles. Then, after the insects have been seized, the insect seizure bag can simply be removed and emptied, making completion of the task that much simpler. This invention is not dependent on having this insect seizure bag 26, and if it is not required, it can be eliminated. In the Diagram, 25 indicates a material that prevents reverse movement such as an open rubber bag or fin that can open and close. It is at the end of the opening to the insect seizure chamber 22. While the means of suctioning 3 is turned off, this material will be closed by its restorative spring force, but if the suctioning airflow is introduced into the insect-seizure chamber 22 by the operation of the suctioning means 3, the material will open with the airflow. As a result, the insects suctioned into the suction openings 21 can be guided into the insect seizure chamber 22, but the insects will not be able to escape with the opening to the insect seizure chamber 22 closed when the suctioning means 3 is turned off. This makes it possible to seize the insects securely.

The suctioning means three 3 is installed inside a separate space 31 that is connected to the insect seizure chamber 22 through the filter 24. The suctioning means 31 [or 3?] consists of a motor 32 operated by electricity, and a compressor 33 run by the motor 32, with the interior of the insect seizure chamber 22 and insect seizure bag 26 kept at low atmospheric pressure. In other words, the air inside the insect seizure

chamber 22 and insect seizure bag 26 is suctioned and expelled outside, and the above-mentioned suctioning airflow, which is intended to seize insects through the operation of suctioning means 3, is generated. In this case, running the motor 32 will make it possible to appropriately adjust the output, and it can be suited to the environmental conditions, including installation location and wind, so that insect trapping can be optimized. Or, the operating times can be regulated with a timer.

Furthermore, a circulating air channel 50 is connected to the end of the separate space 31 in which the suctioning means 3 is housed. In the example in the Diagram, the circulating channel of air 50 consists of an appropriate tube attached at one end to the separate space 31, and the expelled air that is under pressure due to the running of the suctioning means 3 is introduced. On the other hand, the other end of the tube 51 is open to the suction openings 21, and the expelled air under pressure is directed so that it is expelled into the suction openings 21. Therefore, significant airflow that is greater than the original airflow is generated at the suction openings 21 through the expulsion of the pressurized air from the tube. As a result, the forcible suctioning of insects is increased and the rate of insect capture increases, and, further, since the insects can be prevented from adhering to the suction openings 21 and the light source 1, these parts do not get dirty. This type of circulating air channel 50 can also be formed through other structures. For example, when a case is used to enclose the insect seizure chamber 22 and separate space 31, a space is left between the case and chamber 22 and 31, and this space can be used as the circulating air channel. In this situation, the case has dimensions that will take in the suction openings 21, and this becomes the circulation air channel. In this situation, the entire case is enclosed and no portions protrude, thereby improving the appearance of the device as well as making it easy to transport.

#### (Effects of the Invention)

As explained above, this invention forcibly captures through the suction force of a suction means insects that are attracted to a light source. It thus increases the rate of insect seizure sizably. In addition, because it does not scatter the insects around, it is a very practical and effective device. Also, with the circulating air channel, the pressurized air is returned to the suction openings and increases the suctioning airflow from the suction openings. This additional force makes it possible to reliably capture insects with power.

#### 4. Brief Explanation of the Diagram

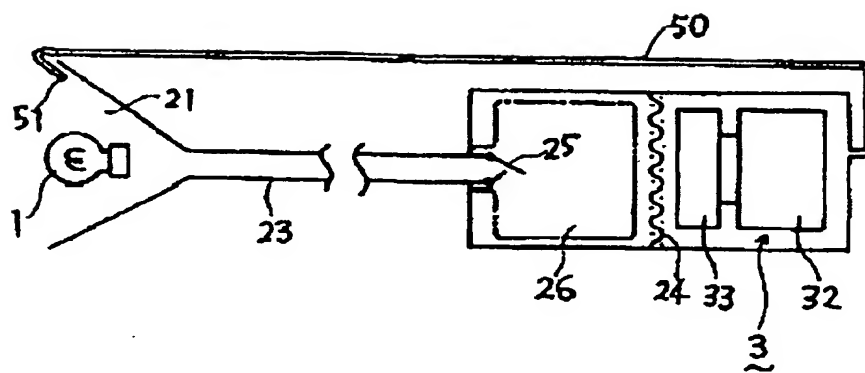
Diagram 1 shows an overall diagram of a working example of this invention.

- 1 ... light source
- 2 ... means of insect seizure
- 3 ... suctioning means
- 21 ... suction openings
- 22 ... insect seizure chamber
- 26 ... insect seizure bag
- 50 ... circulating air channel

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Figure 1



⑤ 日本国特許庁(J P)

⑩ 実用新案出願公開

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⑳ 実用新案登録請求の範囲

光源と、光源の周囲の適宜箇所に設けられた吸込口を有し吸込口から吸い込まれた虫を捕獲する捕虫手段と、この捕虫手段を減圧状態として前記吸込口に吸引空気流を生成する吸引手段と、この吸引手段の駆動によつて排気された空気が前記吸込口部分から噴き出すように案内する環流路とを

備えていることを特徴とする虫取り機。

図面の簡単な説明

第1図は本考案の一実施例を示す概念図である。

1…光源、2…捕虫手段、3…吸引手段、21…吸込口、22…捕虫室、26…捕虫袋、50…環流路。

第1図

